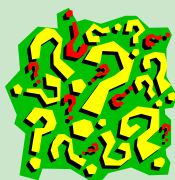


GENOMICS and YOU

"What is it and why now?"

What Does it Mean for Me?

- Write down ideas of how you can use genomics

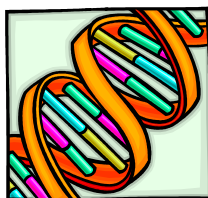


What we can do for YOU!!!

- ✓Research genomics of specific diseases
- ✓Disease-specific genomics trainings
- ✓Networking with genomics experts and research centers
- ✓Develop specific genomics-related activities for program

The Genomic Era

The genomic era is upon us. New advances in genomics are being discovered daily and public health



needs to be prepared for the surge of information to come. But what exactly is genomics? And what does it have to do with public health? To begin let's get some definitions straight.

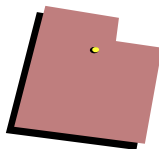
Genetics: study of single genes and their effects (sickle cell anemia or

Huntington's disease)

Genomics: study of the functions and interactions of all the genes in the genome, including their interactions with environmental factors (common chronic diseases such as heart disease or asthma)

Public Health Genomics: study and application of knowledge about the elements of the human genome and their functions including interactions with the environment, in relation to

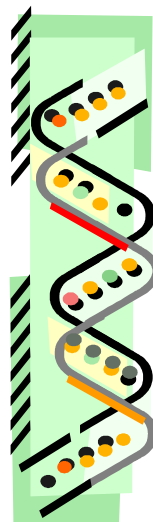
Genomics in Utah



The Utah Department of Health Chronic Disease Genomics program is one of only 4 similar programs in the nation. Undertaking a new CDC project isn't easy, so what are we doing to help Utah apply genomics in public health?

Partnerships – Program Manager Rebecca Giles has formed a UDOH Genomics Workgroup to develop a plan for incorporating genomics into department functions. She has also established a Standing Committee with experts in genetics from around the Wasatch Front to address issues in the Utah State Genetics Plan.

Education – Health Program Specialist Jenny Johnson has begun training the public health workforce with the genomic skills needed to reduce the burden of chronic disease. Future genomic trainings will also be held for health care providers,



"The new frontier opened by genomics offers public health an opportunity to apply new knowledge in the effort to prevent and treat diseases that currently threaten the public's health."

— "On the edge of tomorrow: Fitting genomics into public health policy"



the public, and policymakers.

Data – Epidemiologist Jess Agraz has begun assessing the use of the Behavioral Risk Factor Surveillance System, Utah Population Data Base, and other Health Risk Assessments to explore how family history contributes to disease.

Did You Know?



****Humans are 99.9% identical. Only 0.1% of our genetic code makeup differs!**

**** If typed, the genetic code would fill about 134 complete sets of the Encyclopedia Britannica!**



****Goldfish have more chromosomes than humans!**

Source: http://genetics.gsk.com/index_flash.htm

Resources

**** CDC Office of Genomics and Disease Prevention**

<http://www.cdc.gov/genomics/default.htm>

Check out the Weekly Update!

**** Genetic Science Learning Center at U of U**

<http://gslc.genetics.utah.edu/>

**** ASTHO Genomics Toolkit**
<http://www.genomicstoolkit.org/index.shtml>

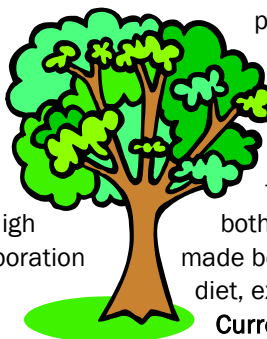
**** Genetics and the Law**
<http://www.genelaw.info/>

**** NCHPEG**
<http://www.nchpeg.org>

Watch for our website coming soon!

Family History as a Genomic Tool

Family History is becoming a hot topic in the world of public health. A family history can help to determine the genetic, social, and environmental factors of chronic diseases and can be a cost-effective method intervention for high-risk populations. Utah has had 20 years of experience with collecting family history and results show family history works! In 1983 the Family High Risk Program began in collaboration with the University of Utah, local health departments, and high schools from around the state. Students were given a Health Family Tree to complete with their



the results sent to consenting families. Local health department public health nurses provided

counseling, screenings, and other education to families at high-risk for diseases such as cancer and stroke. Results from the project showed that both high-risk and low-risk families made behavior changes (screenings, diet, exercise, etc).

Currently the Genomics Program is developing an Internet version of the Health Family Tree. Future plans include piloting the family history tool

"By knowing your genes, you can save your life"
- Aubrey Milunsky
"Your Genetic Destiny"

It's Coming! Are you Ready?



Nutrigenomics is a new science that looks at how genetics and nutrition interact to affect health. It hopes to provide individuals with personalized diets according to their genetic makeup thus preventing or treating diet-related diseases. It could also help us understand why some populations are affected by certain diseases more so than others.

Pharmacogenomics explores how a person's genetics interacts with medications. It promises

to usher in a new era of medicine where drugs are "tailor-made" to fit your unique genetic makeup, making medicine safer and more effective.

Just think of the implications it has for asthma, vaccinations, chemotherapy treatments and more!



Don't think this stuff is a big deal?

Companies are now marketing tests that promise to personalize one's diet, risk from heart disease or osteoporosis, and even the amount of alcohol that should be consumed for optimal health! The problem is they aren't regulated and their products come before scientific evidence is available to back up their claims!

It's not for me! Still not convinced, think about this ...

9 of the 10 leading causes of death in the U.S. (in 2000) have a genetic component!

- ✓ Heart Disease
- ✓ Cancer
- ✓ Cerebrovascular Disease
- ✓ Chronic Lower Respiratory Disease
- ? Accidents/Unintentional Injuries
- ✓ Diabetes
- ✓ Pneumonia/Influenza
- ✓ Alzheimer's Disease



We can't wait for genomics to come to us, it's already here!

✓ Kidney Disease

✓ Septicemia

Source: National Vital Statistics Report, Vol 50, No. 16, Sept 16, 2002

Many of these diseases have both a genetic and environmental component. **But genetic susceptibility is NOT health destiny!!!** We have control over our behaviors and our environment. Genomics won't change the primary goals of public health but it can help to target messages and interventions towards those at highest risk for disease. It can also help to make screening recommendations and risk assessments better. Genomics will move medicine from a "diagnose and treat" mindset to a "predict and prevent" mindset.